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Running Head: OPERATING A PATIENT MEDICINES HELPLINE

Operating a Patient Medicines Helpline: A Survey Study Exploring Current Practice in England Using
the RE-AIM Evaluation Framework.

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Abstract

Background: Patient medicines helplines provide a means of accessing medicines-related support following hospital discharge. However, it is unknown how many National Health Service (NHS) Trusts currently provide a helpline, nor how they are operated. Using the RE-AIM evaluation framework (*Reach, Effectiveness, Adoption, Implementation, and Maintenance*), we sought to obtain key data concerning the provision and use of patient medicines helplines in NHS Trusts in England. This included the extent to which the delivery of helplines meet with national standards that are endorsed by the Royal Pharmaceutical Society (standards pertaining to helpline access, availability, and promotion).

Methods: An online survey was sent to Medicines Information Pharmacists and Chief Pharmacists at all 226 acute, mental health, specialist, and community NHS Trusts in England in 2017.

Results: *Adoption*: 52% of Trusts reported providing a patient medicines helpline (acute: 67%; mental health: 29%; specialist: 41%; community: 18%). *Reach*: Helplines were predominantly available for discharged inpatients, outpatients, and carers (98%, 95% and 93% of Trusts, respectively), and to a lesser extent, the local public (22% of Trusts). The median number of enquiries received per week was five. *Implementation*: For helpline access, 54% of Trusts reported complying with all 'satisfactory' standards, and 26% reported complying with all 'commendable' standards. For helpline availability, the percentages were 86% and 5%, respectively. For helpline promotion, these percentages were 3% and 40%. One Trust reported complying with all standards. *Maintenance*: The median number of years that helplines had been operating was six. *Effectiveness*: main perceived benefits included patients avoiding harm, and improving patients' medication adherence.

Conclusions: Patient medicines helplines are provided by just over half of NHS Trusts in England. However, the proportion of mental health and community Trusts that operate a helpline is less than half of that of the acute Trusts, and there are regional variations in helpline provision.

Adherence to the national standards could generally be improved, although the lowest adherence was regarding helpline promotion. Recommendations to increase the use of helplines include increasing the number of promotional methods used, the number of ways to contact the service, and the number of hours that the service is available.

Keywords: patient medicines helplines, RE-AIM, National Health Service, medicines information, drug information, hospital pharmacy, clinical audit.

BACKGROUND

Patients often experience changes to their medicines regimen while they are in hospital, and it is healthcare policy in the United Kingdom (UK) to ensure that patients' medicines are managed optimally after discharge from secondary care [1, 2]. However, UK and international research suggest that a substantial proportion of patients who have been discharged from hospital subsequently experience medicines-related problems [3-7]. For example, Lee et al. [3] conducted a study which involved interviewing ninety-six patients after being discharged from one of six acute hospitals in the North-West of England. They found that 36% of patients experienced problems with their medication following discharge, particularly around side effects (63%), and that 26% had actually sought or been given help following discharge, mainly from their general practitioner. Relatedly, UK and international research also show that patients often lack knowledge of their medications following discharge from hospital, particularly around side effects [8-13], and that many patients report not receiving important medicines-related information [14-16]. Results from the 2017 UK National Health Service (NHS) Adult Inpatient Survey found that 30% of 46,795 patients reported that they were not provided with completely clear written or printed information about their medicines, and 43% of 43,719 patients did not recall receiving any information from staff about side effects to look out for when they returned home [17]. Another evident problem which patients may also experience following hospital discharge are medicines-related errors, such as prescribing errors and incorrect or missing information on discharge summary documents [18-20]. In sum, discharge from hospital presents a potentially confusing and/or risky time for the many patients who have recently experienced changes to their medicines.

In many countries, medicines information (MI) services have been established to support patients and the public with questions about their medication [21-25]. In the UK, patient medicines helplines have become available from a number of hospital pharmacies to provide medicines-related support for patients who have received care within secondary healthcare [26, 27]. Patient medicines helplines are typically operated by pharmacy professionals (pharmacists and pharmacy technicians

1 registered with the General Pharmaceutical Council) who specialise in the provision of MI services
2 (from here on, referred to as MI pharmacy professionals) [28]. The first patient medicines helpline in
3 the UK was established in 1992, with the aim of improving patients' knowledge and use of their
4 medicines [29]. In 2007, the Healthcare Commission in the UK reported that, of the 173 acute and
5 specialist NHS Trusts¹ in England, 64% operated a patient medicines helpline, and of 42 mental
6 health Trusts in England and Wales, 31% operated this service [27, 30]. However, over ten years
7 later, it is unknown how many NHS Trusts currently provide a patient medicines helpline.

8 Recently, several service evaluation studies have been published that provide descriptive
9 information about patient medicines helplines, typically reporting the types of calls received and
10 user satisfaction ratings. Such studies suggest that enquiries predominantly concern issues such as
11 adverse effects, administration and dosage, and interactions [26, 28, 31-33]. Enquiries can also result
12 in patients avoiding harm, such as by highlighting medicines-related errors so that they can be
13 corrected [26, 31, 34]. Evaluations of patients' and carers' experiences of using medicines helplines
14 using self-report surveys suggest that services are thorough and that they found the advice useful,
15 that they felt confident with the information they received, and felt reassured as a result [32-34].
16 Consequently, patient medicines helplines offer a means of providing medicines-related support
17 following discharge from secondary care, which users find satisfactory [34]. Moving beyond the
18 individual, an additional proposed benefit of patient medicines helplines is that they may reduce the
19 burden on primary care and emergency services [35]. Evaluation studies suggest that, if patient
20 medicines helplines did not exist, enquirers would typically contact their general practitioner to
21 resolve their medicines-related queries [34]. Providing access to a medicines helpline accords with
22 healthcare policy regarding the importance of patients having access to information about their
23 care, and being involved in care-related decisions [36-39]. Additionally, a priority of UK healthcare
24 policy is to improve patients' transitions of care so they are able to manage their own health, and
25 know how to access healthcare support [37-40].

Although service evaluation studies have been conducted to examine patient medicines helplines, to date, no healthcare evaluation frameworks have been applied for the evaluation of this service. Evaluation frameworks are considered to be beneficial, since they provide a structured and guided approach to evaluating an overall program or intervention, and are typically evidence-based [41]. A widely used framework is RE-AIM, which was first published in 1999 [42, 43] and is recommended in Medical Research Council guidance [44]. Whereas most studies focus upon the effectiveness of an intervention, RE-AIM comprises five dimensions that are considered important for evaluating the public health impact of interventions. These are:

- Reach (proportion and representativeness of the population receiving the intervention);
- Effectiveness (assessment of the positive and negative consequences of an intervention);
- Adoption (proportion and representativeness of settings that adopt an intervention);
- Implementation (extent to which an intervention is delivered as intended);
- Maintenance (extent to which an intervention becomes a relatively stable, enduring part of the behavioural repertoire of an individual/organisation).

The 'RE' dimensions are primarily concerned with the impact on the individual (e.g., whether an intervention is beneficial for the people receiving it, and how many individuals who could benefit from it are receiving it). The 'AIM' dimensions are primarily concerned with the impact of an intervention at the level of the intervention setting (e.g., whether sites that could offer the intervention, offer it; whether the intervention is being offered as intended in sites that offer the intervention, and whether this is stable over time). Glasgow and colleagues argued that whilst the 'AIM' dimensions are less often studied, they are equally important factors in determining the impact of an intervention [45].

The main aim of this study was to obtain key data concerning the provision and usage of patient medicines helplines in NHS Trusts in England. The RE-AIM framework was considered particularly useful to achieve this, since patient medicines helpline services could potentially be adopted by all NHS Trusts with the aim of being available for all of a Trust's patients (*Adoption* and

1 *Reach*). Additionally, national standards for setting up and operating a patient medicines helpline in
2 the UK have recently been developed, and are endorsed by the Royal Pharmaceutical Society [46].
3 This provides the opportunity to evaluate the extent that current practice in the provision of patient
4 medicines helplines meets these standards (*Implementation*).

5 Using the RE-AIM framework, the following five study objectives were developed (re-ordered
6 so that 'AIM' precedes 'RE', since the existence and delivery of an intervention precedes its use and
7 perceived effectiveness):

8 1) Establish the prevalence of patient medicines helplines at NHS Trusts in England, including the
9 percentages by region, and explore the reasons why some Trusts do not provide this service

10 (*Adoption*).

11 2) Examine how patient medicines helplines are operated in England, by comparing how current
12 practice meets with national standards for operating patient medicines helplines (*Implementation*).

13 3) Establish the average number of years that Trusts have operated patient medicines helplines, and
14 the reasons why some Trusts stopped operating a helpline (*Maintenance*).

15 4) Establish for whom patient medicines helpline services are available, and the average number of
16 enquiries received per week (*Reach*).

17 5) Establish pharmacy professionals' perceptions as to the benefits that their patient medicines
18 helpline can have (a proxy measure for *Effectiveness*).

19 **METHOD**

20 **Design**

21 This study involved the use of cross-sectional surveys to establish the provision, usage, and
22 current practice in the operation of patient medicines helplines in NHS Trusts in England.

23 **Participants**

24 Inclusion criteria required participants to be either an MI pharmacy professional at an acute,
25 mental health, specialist or community NHS Trust within England whose role involved operating a
26 patient medicines helpline service at their NHS Trust, or a Chief Pharmacist at an acute, mental

1 health, specialist or community NHS Trust within England that operates a patient medicines helpline
2 service. These two professional groups were chosen because MI pharmacy professionals see first-
3 hand the benefits for patients, and Chief Pharmacists may be better placed to provide a perspective
4 as to how medicines helplines are beneficial within the wider organisation. Additionally, both groups
5 were considered to have insight regarding the operation of their patient medicines helpline service.

6 At the time of data collection (February-May 2017) 226 NHS Trusts were eligible to be
7 included in the survey. Regional Medicines Information (MI) centres were not invited to participate,
8 since they were contacted prior to data collection and none provided a regional patient medicines
9 helpline that is separate from an NHS Trust.

10 **Materials and procedure**

11 ***Developing the data collection tools***

12 Two online surveys were developed using SurveyMonkey [47]. SurveyMonkey is a platform for
13 creating online surveys that is compliant with UK data protection laws, and has been used in other
14 pharmacy practice survey research [48, 49]. Best practice guidance for developing and conducting
15 online surveys was sought and adopted during the design and data collection phases of this study
16 [50, 51]. This included writing survey questions and answer options, and considering ethical issues
17 such as providing participants with information about the study and obtaining consent.

18 Survey 1 was developed to be completed by a lead MI pharmacy professional at each NHS
19 Trusts (or delegated deputy). This was because Survey 1 was tailored to ask questions about the
20 actual operation of the helpline (e.g., the average number of calls per week, and what the advertised
21 hours are), and MI pharmacy professionals typically perform this role. However, if no-one from the
22 MI team decided to participate, or if the Trust did not have an MI team, Survey 1 was instead sent to
23 the Trust's Chief Pharmacist to complete.

24 Firstly, Survey 1 sought to establish whether each NHS Trust provides a patient medicines
25 helpline service (*RE-AIM Adoption*). For those Trusts that did not provide a helpline, subsequent
26 questions within Survey 1 focussed on exploring this in more detail (e.g., whether they ever provided

1 a helpline, and if so, the reason/s why the helpline stopped; the reason/s why their Trust does not
2 currently provide a helpline service). For NHS Trusts that did provide a helpline service, subsequent
3 questions within Survey 1 explored the operation and usage of the service, structured by the
4 remaining RE-AIM dimensions.

5 To measure *RE-AIM Implementation*, the sections of the national standards for operating
6 patient medicines helplines [46] pertaining to access, availability, and promotion of patient
7 medicines helplines were developed in to questions for inclusion in the survey. The standards for
8 helpline access, availability, and promotion were used, since these sections are most likely to impact
9 helpline service users (other sections pertain to use of standard operating procedures, use of
10 information and professional support, and quality and risk). The standards are separated in to
11 'satisfactory' and 'commendable' aspects of helpline operation, and both types were included in the
12 survey.

13 For *RE-AIM Maintenance*, participants were asked to report the year that their helpline
14 service was set up, so that this information could be used to establish the average length of time
15 that helplines have been running.

16 For *RE-AIM Reach*, participants were asked to report who could use the helpline service, and
17 the number of enquiries received to the helpline service per week.

18 For *RE-AIM Effectiveness*, MI Pharmacy professionals' and Chief Pharmacists' perceptions as to
19 the benefits of patient medicines helpline services were sought. A list of potential benefits of patient
20 medicines helplines has been developed by the same small working group of proponents of the
21 service that developed the national standards, and have also been endorsed by the Royal
22 Pharmaceutical Society [35]. These proposed benefits were included in Survey 1, and were the
23 primary feature of Survey 2. Participants' options were to rate each item as having 'major benefit' or
24 'minor benefit'/'no benefit'. Participants were also given the option to report any additional
25 perceived benefits that were not included in the list.

Survey 2 was developed to be completed by Chief Pharmacists (or delegated deputy) at Trusts that operate a medicines helpline, where Survey 1 had already been completed by an MI pharmacy professional. The aim of Survey 2 was to explore Chief Pharmacists' perspectives as to how patient medicines helplines are beneficial, since Chief Pharmacists may be more likely to take a wider organisational view than those involved in the day-to-day operation of the helpline service. The primary feature of Survey 2 was therefore the *RE-AIM Effectiveness* section of Survey 1.

Overall, survey questions primarily consisted of either yes/no or multiple-choice answers, although some questions also provided free-text boxes. The questions and response options for Survey 1 and Survey 2 are provided in Additional file 1.

Pre-test and pilot

Following recommended methods [52], a pre-test of the survey was conducted, with three pharmacists with expertise in the area of patient medicines helplines. The aim of the pre-test was to assess the content, length and format, and to identify problems that may interfere with respondents completing the survey consistently and accurately. Amendments were made based upon the feedback of the pre-test.

Additionally, prior to study commencement, a pilot study was conducted. The pilot involved collecting survey data using a randomly selected 10% of the main study sample, ensuring that Trust type and geographical coverage of England were represented. The results of the pilot suggested that no changes were necessary, so data from the pilot were included in the final results.

Data collection

Figure 1 shows the procedure for collecting data using the two surveys.

[INSERT FIGURE 1 HERE]

Data were collected between February-May 2017. Survey 1 was sent to MI pharmacy professionals at all acute, mental health, specialist, and community NHS Trusts in England, via email.

If Survey 1 was not completed by an MI pharmacy professional, it was sent to the Chief Pharmacist of the NHS Trust, via email. If Survey 1 was completed by an MI pharmacy professional, and if the Trust reported providing a patient medicines helpline, the Chief Pharmacist of the Trust received Survey 2. For all participants, three reminder emails were sent if there was no response, within two weekly intervals. Non-responders were contacted to establish whether or not their Trust provided a helpline. Participants were informed that by completing the survey, they would have the option of being included in a prize draw to win a £25 gift voucher.

Data analysis

Data were analysed using SPSS version 23 to primarily produce descriptive statistics (e.g., percentages of NHS Trusts complying with the standards). Chi square tests of independence were used to examine the relationships between Chief Pharmacists' and MI pharmacy professionals' ratings of the benefits of patient medicines helplines. To establish the percentage of NHS Trusts which provide a patient medicines helpline by region of England, an official list of NHS Trusts within ten regions of England was used [53].

RESULTS

Response rates

Out of 226 NHS Trusts, 202 completed Survey 1 (89%). Of these, 127 (63%) were completed by an MI pharmacy professional, and sixty-two (31%) were completed by a Chief Pharmacist (thirteen did not disclose their job title; 6%). The remaining 11% of Trusts were contacted to establish whether they operated a patient medicines helpline, with all such trusts providing a response to this item. Of the survey non-responders, eleven were from mental health Trusts (48%; 20% of all mental health Trusts), six were from acute Trusts (26%; 4% of all acute Trusts), five were from community Trusts (22%; 29% of all community Trusts) and one was from a specialist Trust (4%; 6% of all specialist Trusts).

Additionally, fifty-two Chief pharmacists also completed Survey 2 comprising the questions about the benefits of providing a helpline service.

RE-AIM 'Adoption'

Table 1 shows the percentage of NHS Trusts in England that provide access to a patient medicines helpline, by Trust type and region. Combined, 52% of NHS Trusts provide this service (acute, 67%; specialist, 41%; mental health, 29%; and community, 18%).

[INSERT TABLE 1 HERE. FOR TABLE 1, SEE END OF DOCUMENT]

Out of the 117 Trusts that provided a patient medicines helpline, 110 answered whether they operated the service directly or via another Trust. Three out of 110 Trusts reported providing the helpline service via another Trust (3%). Of the 107 Trusts which operated their own helpline, 103 Trusts operated one helpline (96%), three Trusts operated two helplines (3%) and one Trust operated three helplines (1%). Table 2 reports the percentages of where patient medicines helpline services are located within NHS Trusts, showing that helplines are predominantly located within MI centres (87%).

[INSERT TABLE 2 HERE. FOR TABLE 2, SEE END OF DOCUMENT]

Of the 109 non-helpline Trusts, seventy-six provided comments as to why they do not offer the service. For fifty-four of the seventy-six, the reason was a lack of resources (staff time and/or funding; 71%). For sixteen of the seventy-six, the reason was not having a MI service (21%). Three Trusts answered that they do not have a helpline because they do not know what the demand would be (4%). Six per cent reported that their Trust has plans to provide a patient medicines helpline in the future, whereas 56% reported that this was a possibility, and 38% reported that their Trust did not have any plan to provide this service in the future.

Of the non-helpline Trusts, 90% reported that, if they did receive a call from a discharged patient about their medicines, they would answer the query.

RE-AIM 'Implementation'

Tables 3-5 shows the percentages of NHS Trusts which were found to comply with the national standards for helpline access, availability and promotion.

[INSERT TABLE 3 HERE. FOR TABLE 3, SEE END OF DOCUMENT]

[INSERT TABLE 4 HERE. FOR TABLE 4, SEE END OF DOCUMENT]

[INSERT TABLE 5 HERE. FOR TABLE 5, SEE END OF DOCUMENT]

Of the 107 NHS Trusts that answered all questions pertaining to the helpline access standards, sixteen NHS Trusts were fully compliant with all access standards (15%; 54% were compliant with all 'satisfactory' standards, and 26% were compliant with all 'commendable' standards). Of the 107 NHS Trusts that answered all questions pertaining to the helpline availability standards, five NHS Trusts were fully compliant with all availability standards (5%; 86% were compliant with all 'satisfactory' standards, and 5% were compliant with all 'commendable' standards). Of the ninety-nine NHS Trusts that answered all questions pertaining to the helpline promotion standards, two NHS Trusts were fully compliant with all promotion standards (2%; 3% were compliant with all 'satisfactory' standards, and 40% were compliant with all 'commendable' standards).

Out of the ninety-nine Trusts that answered all questions pertaining to the 'satisfactory' national standards, one NHS Trust was fully compliant with all 'satisfactory' standards (1%). Out of the 106 Trusts that answered all questions pertaining to the 'commendable' national standards, two NHS Trusts were fully compliant with all 'commendable' standards (2%). From a total of ninety-nine Trusts that answered all questions pertaining to both 'satisfactory' and 'commendable' national standards, one Trust was fully compliant with all standards (1%). Figure 2 shows the percentages of NHS Trusts that were found to comply with all of the national standards for helpline access,

availability and promotion.

[INSERT FIGURE 2 HERE]

RE-AIM ‘Maintenance’

The median time that an NHS Trust had been operating a patient medicines helpline in England was six years (range 1-24 years).

Out of the 109 NHS Trusts which reported that they do not currently provide a patient medicines helpline, eighty-eight Trusts answered whether or not they provided a helpline in the past. Nine responded that they operated a helpline in the past (10%), citing main reasons for discontinuing the service as a lack of resources (lack of staff and/or funding; five of nine; 55%), and insufficient use (two of nine; 22%).

RE-AIM ‘Reach’

Results showed that out of the 117 NHS Trusts that provided a patient medicines helpline, 112 Trusts answered who could access the helpline. Figure 3 shows the provision of access to medicines helplines for different groups of individuals. Medicines helplines are primarily available for discharged inpatients (98% of NHS Trusts), outpatients (95% of NHS Trusts), and patients’ carers (93% of NHS Trusts).

[INSERT FIGURE 3 HERE]

One hundred and seven participants reported the number of enquiries typically received to their patient medicines helpline service per week. For all Trust types combined, the median number of enquiries received per week was five (range 0-50). For acute Trusts, the median was five enquiries. For mental health Trusts, the median was three enquiries. For specialist Trusts, the

median was seven enquiries. The median number of enquiries for community Trusts could not be robustly calculated due to the low number of community Trusts which operated a helpline and which answered this question.

RE-AIM 'Effectiveness'

Table 6 provides an overview of pharmacy professionals' perceptions regarding the major benefits of their helpline service. The top five perceived benefits were: avoiding harm to patients (88%), improving patient medication adherence (85%), providing assurance that patients can access professional help from home (83%), improving the patient experience (e.g., patient satisfaction; 80%), and supporting patient discharge (76%). Chi square tests showed that there was a significant association between professional role and benefit rating for two of the perceived benefits: avoiding harm to patients ($\chi^2(1) = 5.65, p = .017$), and identifying errors ($\chi^2(1) = 9.39, p = .002$). For both, MI pharmacy professionals were more likely to rate the benefits as being major benefits compared to Chief Pharmacists.

[INSERT TABLE 6 HERE. FOR TABLE 6 SEE END OF DOCUMENT]

Exploratory analyses

The median number of five helpline calls per week per NHS Trust was considered by our research team to be low. Exploratory analyses were conducted to explore potential ways to increase helpline use, pertaining to the areas of helpline access, availability and promotion. In order to normalise the data so that parametric tests could be conducted, the data were transformed using a log transformation. Pearson's partial correlation coefficients were calculated to establish the relationships between the number of hours that helplines were available per week and the number of enquiries received per week, and between the number of promotional methods used and the number of enquiries received per week. The size of NHS Trusts was controlled using Hospital Episode

Statistics 'Finished Admission Episodes' for 2015-2016 [54]. Significant positive correlations were found between the two sets of variables ($r(95) = .31, p = .002$ and $r(98) = .23, p = .02$, respectively). Additionally, an analysis of covariance was calculated to establish whether there was a statistically significant difference between the number of enquiries per week for Trusts that only provide access to their service via the telephone (mean number of enquiries per week = 7.0, SD = 8.8) versus Trusts that also provide access via at least one other method of communication (mean number of enquiries per week = 9.9, SD = 9.7). There was a significant effect of number of communication methods on the number of calls after controlling for Trust size, $F(1, 99) = 8.89, p = .004, \eta^2 = .073$.

DISCUSSION

This study used the RE-AIM healthcare interventions evaluation framework to establish the provision, usage, and current practice in the operation of patient medicines helplines in NHS Trusts in England, and pharmacy professionals' perceptions of the main benefits of their service.

Regarding the adoption of patient medicines helplines, this study shows that there is disparity of access to the service within England. Just over half of acute, mental health, specialist and community Trusts in England operate a patient medicines helpline service, although this varies according to type of Trust and region. Only 29% of mental health Trusts and 18% of community Trusts currently provide their patients with access to this service. The percentage of acute and specialist Trusts which provide a patient medicines helpline is over double that of mental health Trusts. This implies that the benefits of patient medicines helplines (i.e., reduced patient harm, and error correction) [26, 31, 34] are currently not experienced to the same extent for patients of mental health and community services, compared to patients of acute and specialist services. Additionally, the proportions of Trusts in the North and Midlands of England which provide the service is typically lower than the proportions of Trusts in the southern regions of England. We also found that nine Trusts reported previously operating a helpline which had been discontinued. The main reason for closure was a lack of resources/funding. Lack of resources/funding was also the main reason why

1 48% of Trusts did not currently provide a helpline, suggesting that this is an important barrier to
2 providing this service. However, regarding the maintenance aspect of patient medicines helplines,
3 our findings suggest that, once adopted, helplines are likely to become a relatively stable service for
4 NHS Trusts. On average, NHS Trusts had been operating for six years, with the longest running for
5 twenty-four years.

6 Our findings suggest that the reach of patient medicines helpline services could be improved.
7 In the UK, up to 44% of patients who have been discharged from hospital may subsequently
8 experience medicines-related problems [3, 4]. Given that there is an identified need for medicines
9 information and a high number of hospital patients [54], the number of patients who use medicines
10 helplines per week should be substantial. However, we identified that the median number of
11 enquiries per Trust was five per week. This finding, along with similar results from previous studies,
12 suggest that patient medicines helplines are an underused service [26-28].

13 Patient medicines helplines are considered to be beneficial because they have the potential to
14 reduce the burden upon other services, including GP and A&E visits, and also to potentially reduce
15 the number of medicines-related hospital readmissions [35]. This is topical, given that the average
16 waiting time from booking a standard appointment to seeing a GP in England in 2016 and 2017 was
17 estimated to be approximately two weeks [55]. Also, in the UK, the Department of Health
18 recognises that urgent care services are struggling to cope with rising demands [40, 56]. In January
19 2017, and again in December 2017, the proportion of patients waiting longer than four hours in A&E
20 reached its highest level since the collection of A&E performance data began [57]. There is also
21 recognition that a proportion of A&E visits could be managed more appropriately elsewhere. For
22 example, 38% of people who attend A&E receive guidance or advice only [58]. The 2014 NHS Five
23 Year Forward View, which provides an outline for improving and modernising the NHS, emphasises
24 that reducing the workload in A&E is a priority [40, 56]. It would therefore be beneficial to examine

1 why patient medicines information helplines are underused, and to consider how it might be
2 possible to encourage their use.

3 Our findings regarding the implementation of patient medicines helplines, whereby we
4 compared current practice to recommended national standards for operating patient medicines
5 helplines, may indicate why this service is underused. The access, availability, and promotion of
6 helplines are all likely to influence their use, and we found that adherence to the national standards
7 could be improved in all three areas. However, the greatest discrepancy between current practice
8 and the national standards concerns the promotion of helplines. For example, promotional material
9 containing information relating to medicine helpline access times and the types of enquiries that
10 patients/carers can make were used in only 40% of Trusts. Not providing this information may cause
11 frustration for callers who call outside of operating hours, and may cause confusion as to what the
12 service provides and whether it can cater to their needs. The main reason why overall adherence to
13 the 'promotion' national standards was particularly low, was because very few Trusts sought the
14 advice of patients regarding the promotional methods to use. Including patients and carers in the
15 development of healthcare services is increasingly recognised as being beneficial for understanding
16 what works and why, in order to improve services [59]. Involving service users may therefore be
17 beneficial for improving not only helpline promotion, but all aspects of this service. Our findings also
18 suggest that increasing the number of promotional methods may increase the use of patient
19 medicines helplines, since the number of methods was significantly correlated with number of
20 enquiries. Additionally, helplines are typically not promoted at all hospital sites, and so this may be
21 another potential explanation for their lack of use.

22 Regarding helpline access and availability, 43% of medicines helplines are available for less
23 than eight hours a day, and at 29% of sites, a pharmacist is not always available. Therefore, service
24 users may not be able to immediately speak to a pharmacist, and it is unknown what effect this has
25 upon enquirers. For example, do enquirers try accessing the helpline again later or do they perhaps

1 seek support elsewhere? We also found that approximately only 7% of Trusts that operate a helpline
2 currently provide the service out of hours (e.g., evenings and/or weekends). For comparison, a
3 recent survey study found that 87% of hospitals at acute and mental health Trusts in England
4 provide an out-of-hours pharmacy advice service for healthcare professionals [60]. Our findings also
5 show that approximately only 5% of Trusts that operate a helpline currently provide the service
6 seven days per week. Since the number of hours per week that a helpline is open correlates with the
7 number of enquiries received per week, another way to increase the use of patient medicines
8 helplines may be to increase the number of hours per week that the service is available.

9 Our results suggest that approximately only 39% of NHS Trusts that operate a patient
10 medicines helpline advertise the service as being accessible via at least one other method of
11 communication besides the telephone, with the main alternative method being email. Providing
12 access via at least one other means of communication besides the telephone was found to
13 significantly increase the number of calls per week, albeit slightly, suggesting that this could be
14 another way of increasing helpline use. Only one NHS Trust reported advertising their service as
15 being accessible via social media. Service evaluation studies that have examined the types of people
16 who call patient medicines helplines suggest that the majority are elderly [26]. In order to better
17 engage with younger people, MI services may benefit from also providing more current methods of
18 communication. Research carried out internationally has begun to examine alternative methods of
19 providing MI to patients and members of the public, including online 'Ask the Pharmacist' services
20 [61], and a Facebook 'Pharmacist Hour' [62].

21 Regarding the effectiveness of patient medicines helplines, we found their main perceived
22 major benefits to be avoiding harm to patients, improving patient medication adherence, and
23 providing assurance that patients can access professional help from home. Service evaluation
24 studies have been conducted which provide evidence that enquiries to patient medicines helplines
25 can result in patients avoiding harm [31], and that between 95-97% of enquirers subsequently

report following the advice given [32, 34]. The only significant differences found between Chief Pharmacists' and MI pharmacy professionals' endorsements of the major benefits were for avoiding harm to patients, and identifying errors. This could be because MI pharmacy professionals have first-hand experience of interacting with helpline callers to know the types of enquiries being made and the impact they can have. Interestingly, reducing visits to other healthcare services (e.g., GPs, A&E) was considered a major benefit by only 51% of respondents. However, this could be because the number of enquiries per week per Trust was found to be relatively low, and so the reduction of visits to other services would likely be minimal (several respondents reported this as the reason for their response, in the 'other comments' section of the survey). Increasing the use of patient medicines helplines may shift pharmacists' perceptions in this respect.

The list of benefits was originally developed by a small working group of proponents of patient medicines helplines [35]. This study provides stronger evidence as to the major benefits of patient medicines helplines, as perceived by a sample of 156 pharmacy professionals with expertise in patient medicines helpline provision.

Recommendations

In order to increase the impact of patient medicines helplines, we encourage helpline providers to consider ways to increase their use. Our findings suggest that this may be achievable by improving the access, availability, and promotion of helplines. For example:

- Providing access to the service by other means in addition to the telephone, such as email, webform via the Trust website, online chat, and Skype.
- Extending the hours of availability, such as providing access to the service beyond typical 9-5 working hours (e.g., evenings and weekends).

- Increasing the number of promotional methods, and/or conducting local improvement projects to establish the types of promotional methods that patients and carers recommend, and would most likely see and remember.
- Promoting the service at all sites within the organisation, and ensuring that promotional methods identify access times and types of enquiries that can be made.

Limitations and future research

A limitation of our study is that we were not able to obtain a full dataset, since some respondents chose not to fully complete all survey questions. Although missing data was minimal, the percentages presented in this study can only be considered to be approximately representative of the total number of NHS Trusts. Another limitation is that, in order to minimise respondent burden, we chose to only include questions that represented the sections of the national standards pertaining to helpline access, availability, and promotion. However, it would be advantageous for a future study to audit the remaining standards, since this may highlight additional ways that helpline providers may improve the delivery of their service. Subsequent research could also audit how helplines are operated in the other three UK countries, and collect additional data to explore some of the RE-AIM dimensions in greater depth. For example, a more thorough approach for understanding the reach of patient medicines helplines would be to follow up a cohort of discharged patients from Trusts that provide a medicines helpline, in order to explore those patients who subsequently require medicines information, and to compare the percentages and characteristics of helpline users with patients who choose alternative sources of support. This study design could also provide an opportunity to explore patients' reasons for not seeking medicines information via the medicines helpline service.

Future research could also seek to establish whether and in what ways the variability in the operation of patient medicines helplines has an effect upon service users, and qualitative methods would be appropriate for exploring patients' and carers' experiences of using this service. Exploring

1 the experiences that service users have regarding their medicines following their use of a patient
2 medicines helpline could also provide further evidence as to the effectiveness of this service. Our
3 measure of the effectiveness of helplines was limited, since it relied upon the perceptions of service
4 providers and may be biased if participants were apprehensive about reporting any negative or poor
5 aspects of their service. Additionally, our survey did not include a question to specifically ask
6 pharmacy professionals to also provide their perceptions as to how patient medicines helpline
7 services could be improved. However, our findings regarding the benefits of helplines provide a
8 useful starting point to identify potential areas for future research. For example, studies could be
9 designed to empirically test whether the perceived benefits of helplines are indeed benefits.

10 Although we have provided recommendations for increasing the use of patient medicines
11 helplines, we acknowledge that increasing their use will likely require additional resources, and we
12 found that a lack of staffing/funding was the main reason for NHS Trusts not providing a helpline,
13 and for ceasing previously existing helplines. Future research could seek to establish whether a more
14 cost-effective yet acceptable approach might be to operate a network of regional patient medicines
15 helplines, or a national service, with collaboration from NHS Trusts for enquiries requiring local
16 resources. However, a recent study by Badiani et al. [34] found that, out of 200 enquiries to their
17 patient medicines helpline service, 75% required access to local knowledge. The most commonly
18 used local source was the patients' electronic medical records (73%), followed by contacting a
19 healthcare professional involved in the patient's care (34%). Badiani et al. conclude that their
20 findings support the value of having a network of local PMHS, rather than a small number of
21 centralised services. Further research is needed to establish the generalisability of this finding.

22 **Conclusion**

23 This study demonstrates that patient medicines helplines continue to be provided by over half
24 of NHS Trusts in England, with a similar percentage as reported by the Healthcare Commission in
25 2007. Also, the percentages of mental health and community Trusts that operate a helpline were

found to be less than half of the percentage of acute Trusts that operate a helpline. Combined, these findings show that not all patients are able to experience the benefits that patient medicines helplines provide, due to a lack of adoption of this service. Adherence to the national standards could generally be improved, although the lowest adherence was regarding helpline promotion. Since patient medicines helplines appear to be an underused service, improving helpline access, availability and promotion may help to increase their use. However, the most cited reason for the lack of a helpline in 48% of NHS Trusts in England is lack of resources. This is also the main reason why some NHS Trusts stopped operating a helpline. Without adequate resources, it may therefore be that helpline providers do not currently have the capacity to increase the use of their service. One option could be to pool resources within regions, although this may not be possible given that many enquiry answers require local knowledge from the hospital where the patient received care. Further research is needed to explore the best way to support all patients who need help with their medicines following hospital discharge, which is cost-effective without diminishing quality.

LIST OF ABBREVIATIONS

UK: United Kingdom; NHS: National Health Service; RE-AIM: reach, efficacy/effectiveness, adoption, implementation, and maintenance; MI: Medicines information; A&E: accident and emergency; GP: general practitioner.

DECLARATIONS

Ethics approval and consent to participate

Prior to study commencement, ethical approval was obtained from the Research Ethics Approval Committee for Health at the University of Bath (Ref: EP 16/17 126). Health Research Authority approval was not sought as the study was deemed to be audit and evaluation by the South West NHS Research Design Service. Informed consent was provided by participants when they ticked a consent box in the online survey that was presented immediately after the participant information

page.

Consent for publication

Not applicable.

Availability of data and material

The datasets generated and analysed during the current study are not publicly available, for data privacy and ethical considerations.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

The study was designed by MW and MJ, with advice from AJ and JS. MW collected all data, conducted the analyses, and drafted the manuscript. All authors read, provided feedback and approved the final manuscript.

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Endnotes

1. The English National Health Service (NHS) is organised in to NHS Trusts, which are organisations that provide goods and services for the purposes of health care (e.g., hospital and community services), and each Trust primarily serves a geographical area within England.

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1 **Figure Legends**

2 *Figure 1. Data collection procedure.*

3 *Figure 2. Total compliance with national standards for patient medicines helpline access, availability,*
4 *and promotion.* Note. Numbers in parentheses show the actual numbers of NHS Trusts that met the
5 standards, out of the total number of Trusts that answered the survey questions pertaining to the
6 standards.

7 *Figure 3. Provision of access to medicines helplines for different groups of individuals (n = 112).*

8 **Additional files**

9 File name: Additional file 1.

10 File format: .pdf

11 Title of data: Additional file 1. Survey questions

12 Description of data: Questions and answer options for Survey 1 and Survey 2.

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Table 1. NHS Trusts in England providing access to a patient medicines helpline service.

Type of NHS Trust / region of England	Percentage of NHS Trusts providing access to a helpline ^a
Acute Trust	67% (91/136)
Specialist Trust	41% (7/17)
Mental health Trust	29% (16/56)
Community Trust	18% (3/17)
Total NHS Trusts	52% (117/226)
East of England	72% (18/25)
South Central	69% (9/13)
South East	69% (11/16)
London	60% (21/35)
North East	60% (6/10)
Yorkshire & Humber	52% (11/21)
South West	46% (11/24)
North West	41% (16/39)
East Midlands	33% (5/15)
West Midlands	32% (9/28)

^a Numbers in parentheses show the actual numbers of NHS Trusts that reported providing access to a helpline, out of the total number of Trusts, for the type of Trust or the region of England.

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Table 2. Location of patient medicines helpline services within NHS Trusts in England.

Location of the helpline service within the NHS Trust	Percentage of NHS Trusts providing their helpline from the specified location ^a
Medicines Information Centre	87% (97/112)
General clinical pharmacy services	13% (15/112)
Dispensary	4% (5/112)
Specialist clinical pharmacy services	4% (4/112)

Note. Nine Trusts reported that their helpline service was provided by more than one location within the NHS Trust (8%), which is why the total exceeds 100%.

^a Numbers in parentheses show the actual numbers of NHS Trusts that reported providing their helpline from the specified location, out of the total number of NHS Trusts which reported providing access to a helpline and answered this survey question.

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Table 3. Compliance with national standards for 'satisfactory' and 'commendable' levels of patient medicines helpline access

National standards: Helpline access		Percentage of NHS Trusts meeting each standard ^a
'Satisfactory' standards	Calls charged at local rate or Freephone (not a premium number).	99% (108/109)
	The phone line allows direct dialling from outside.	97% (106/109)
	An answerphone allows a message to be left outside of advertised hours.	81% (88/108)
	Contact with a pharmacy professional is always available during advertised hours.	71% (77/108)
	Total compliance with access 'satisfactory' standards.	54% (58/108)
'Commendable' standards	The helpline has a dedicated phone number.	60% (65/109)
	There is access to the service by means other than telephone, such as email, webform, personal visit ^b .	39% (42/109)
	Total compliance with access 'commendable' standards.	26% (28/107)
Total compliance with both 'satisfactory' and 'commendable' access standards		15% (16/107)

Note. Although 117 of 226 acute, mental health, specialist, and community NHS Trusts reported providing a patient medicines helpline, not all NHS Trusts answered every survey question.

^a Numbers in parentheses show the actual numbers of NHS Trusts that met the standard, out of the total number of Trusts which answered the survey question pertaining to the standard.

^b Thirty-four Trusts reported advertising their service as being accessible via one other method besides the telephone (31%), and eight Trusts reported advertising their service as being accessible via two other methods besides the telephone (7%). At thirty-four Trusts, their service was advertised as being accessible via email (31%). At eight Trusts, their service was advertised as being accessible via online web form (7%). At seven Trusts, their service was advertised as being accessible face-to-face (6%). At one Trust, their service was advertised as being accessible via social media (Twitter; 1%).

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Table 4. Compliance with national standards for 'satisfactory' and 'commendable' levels of patient medicines helpline availability

National standards: Helpline availability		Percentage of NHS Trusts meeting each standard ^a
'Satisfactory' Standards	The helpline is available five days per week.	96% (103/107)
	The helpline is accessible to patients/carers for minimum of four hours per day.	86% (92/107)
	Total compliance with availability 'satisfactory' standards.	86% (92/107)
'Commendable' Standards	The helpline is available for eight hours or more per day.	57% (61/107)
	The helpline is available for extended hours (i.e., evenings, weekends ^b).	7% (7/107)
	Total compliance with availability 'commendable' standards.	5% (5/107)
Total compliance with both 'satisfactory' and 'commendable' availability standards		5% (5/107)

Note. Although 117 of 226 acute, mental health, specialist, and community NHS Trusts reported providing a patient medicines helpline, not all NHS Trusts answered every survey question.

^a Numbers in parentheses show the actual numbers of NHS Trusts that met the standard, out of the total number of Trusts which answered the survey question pertaining to the standard.

^b Three of 107 (3%) helpline services were reported as being available in the evenings; five of 107 (5%) helpline services were reported as being available at weekends (and operate seven days per week).

Table 5. Compliance with national standards for 'satisfactory' and 'commendable' levels of patient medicines helpline promotion

National standards: Helpline promotion		Percentage of NHS Trusts meeting each standard ^a
'Satisfactory' Standards	The helpline is promoted at all of the healthcare organisation's sites.	59% (64/109)
	Promotional materials identify access times and types of enquiries patients/carers can make.	40% (44/109)
	The helpline is promoted to discharged inpatients by methods agreed with patients locally.	6% (6/100)
	Total compliance with promotion 'satisfactory' standards.	3% (3/100)
'Commendable' Standards	The helpline is also promoted to outpatients.	84% (91/108)
	Additional promotional methods are used, such as patient leaflets and the NHS Trust website ^b .	42% (46/109)
	Total compliance with promotion 'commendable' standards.	40% (43/108)
Total compliance with both 'satisfactory' and 'commendable' promotion standards		2% (2/99)

Note. Although 117 of 226 acute, mental health, specialist, and community NHS Trusts reported providing a patient medicines helpline, not all NHS Trusts answered every survey question.

^a Numbers in parentheses show the actual numbers of NHS Trusts that met the standard, out of the total number of Trusts which answered the survey question pertaining to the standard.

^b Eighty-two Trusts reported that their helpline was promoted using leaflets or business cards that are given to patients (75%). Forty-two Trusts reported that their helpline was advertised on the Trust website (38%). Forty Trusts reported that their helpline was promoted on medicines labels or on medicines bag labels (37%). Thirty-six Trusts reported that their helpline was promoted on the patient's discharge summary (33%). Thirty Trusts reported that their helpline was promoted using posters in clinical areas (27%). Twenty-two Trusts reported that staff routinely tell patients about the helpline (20%). The median number of promotional methods used was two. The maximum number of promotional methods used by a single Trust was seven.

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Table 6. Pharmacy professionals' perceptions of the benefits of patient medicines helpline services

Proposed benefits of patient medicines helplines	% who see it as a major benefit		
	MI pharmacy professionals (n = 87)	Chief Pharmacists (n = 66)	Total (n = 156 ^a)
Avoiding harm to patients (e.g., adverse effects, interactions).	93% ^b	80% ^b	88%
Improving patient medication adherence.	89%	80%	85%
Providing assurance to patients that they can access professional help from home.	84%	80%	83%
Improving the patient experience (e.g., patient satisfaction).	84%	76%	80%
Supporting patient discharge.	78%	71%	76%
Optimising medicines.	76%	73%	75%
Identifying errors.	85% ^c	64% ^c	75%
Reducing medicines-related readmissions.	67%	62%	65%
Learning from adverse patient experiences.	55%	56%	55%
Reducing visits to other healthcare services (e.g., GPs, A&E).	52%	53%	51%
Helping the organisation avoid complaints and possible litigation.	44%	42%	43%
Adhering to the NHS constitution (e.g., patients have a right to receive information).	40%	30%	37%
Improvement in Trust targets and in national surveys.	22%	26%	23%

Note. Although 117 of 226 acute, mental health, specialist, and community NHS Trusts reported providing a patient medicines helpline, not all NHS Trusts answered every survey question.

Respondents were also provided a free-text box to record other perceived benefits. However, these suggestions were not included in the results since they were either a rewording of an item already in the list, or not also suggested by any other respondents.

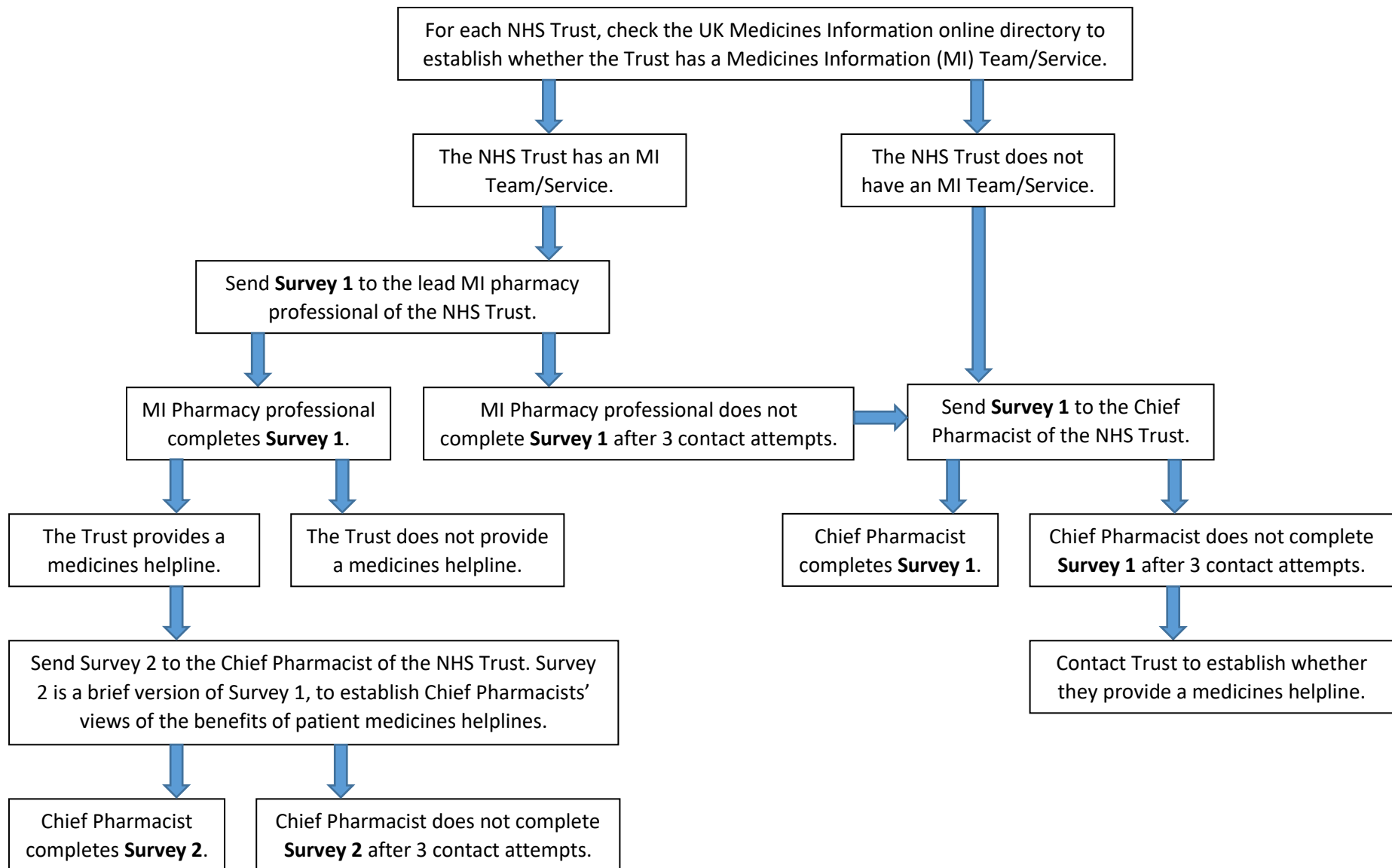
^a Not all respondents provided their job title, which is why the total is greater than the number of MI pharmacy professionals and Chief Pharmacists combined.

^b A Chi square test of independence showed that there was a significant association between professional role and rating, at $p < .05$.

^c A Chi square test of independence showed that there was a significant association between professional role and rating, at $p < .005$.

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Figure 1:



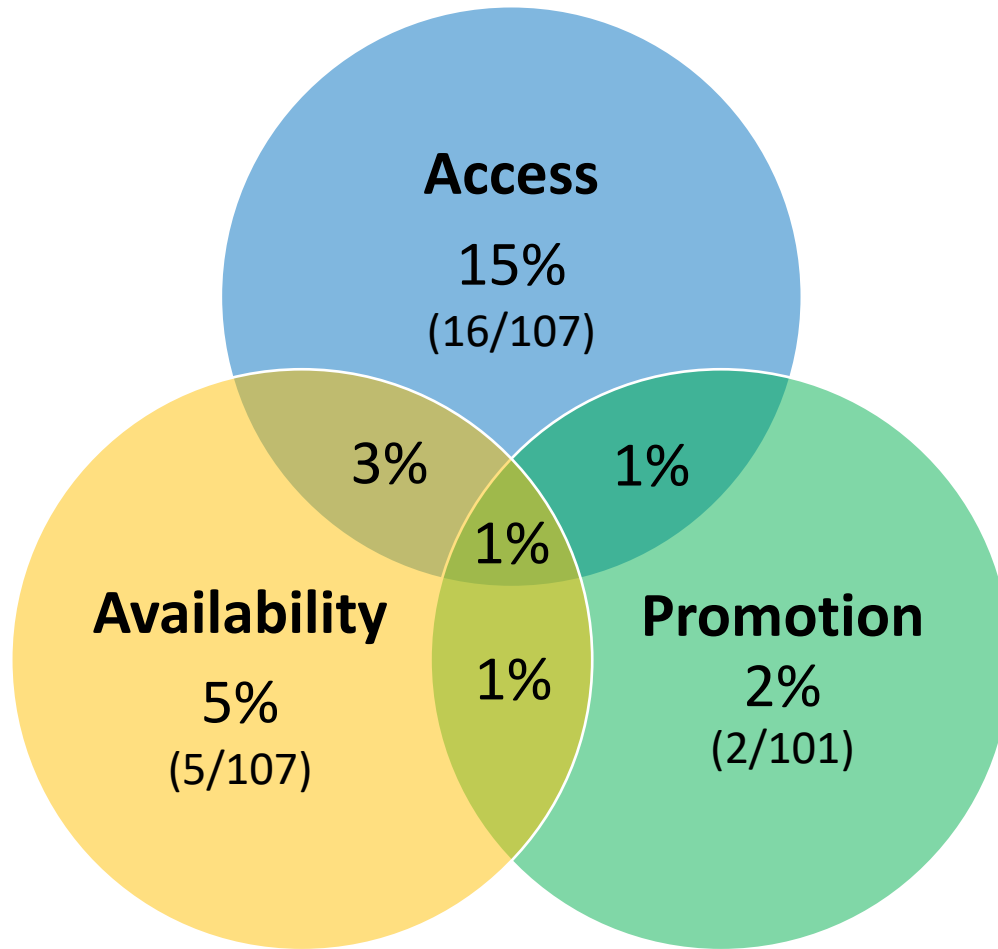
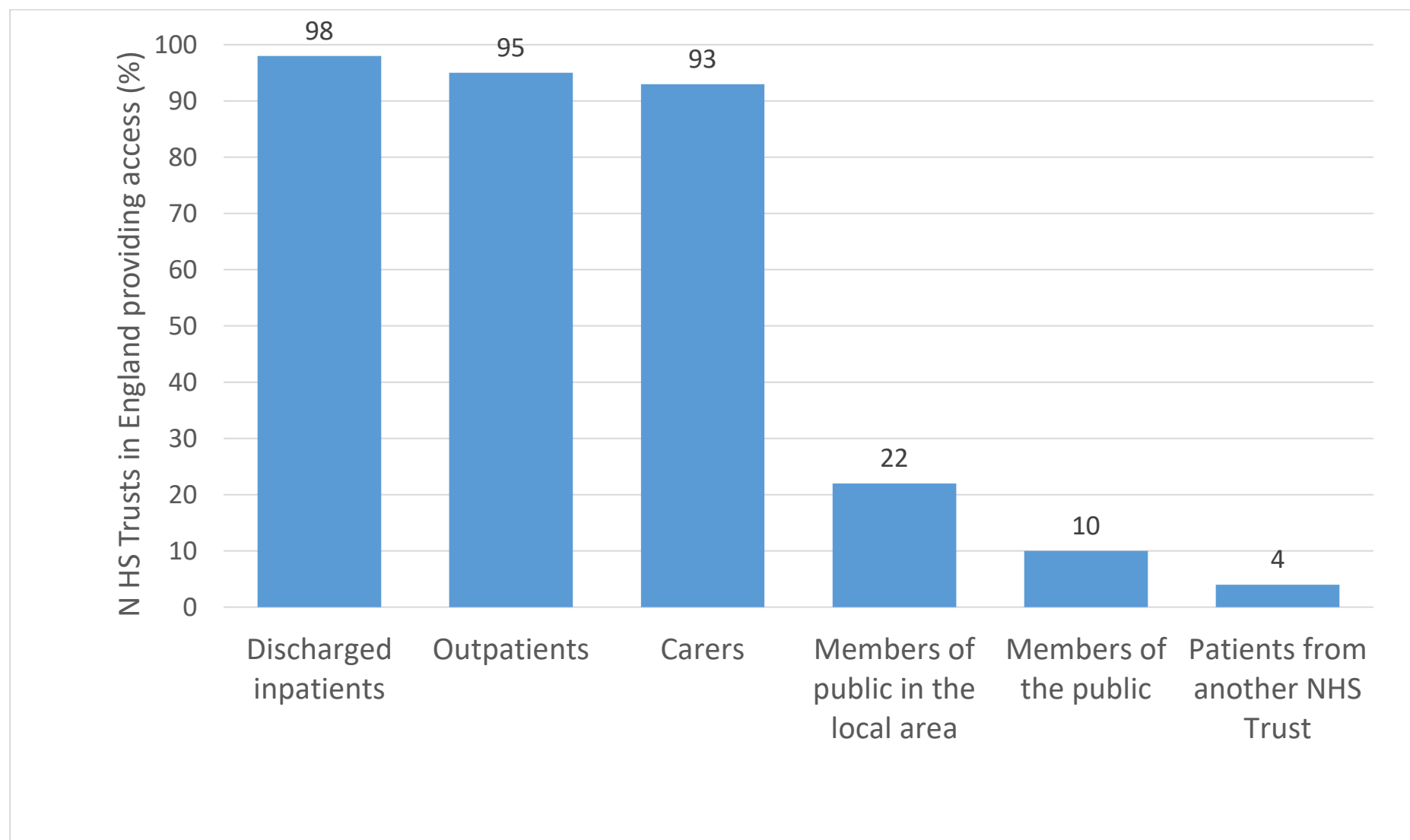


Figure 2

Figure 3:



Operating a Patient Medicines Helpline: A Survey Study Exploring Current Practice in England Using the RE-AIM Evaluation Framework

Survey 1 questions and answer options

Question	Answer type	Answer options (if applicable)
A patient medicines helpline can be defined as: "A telephone line, provided or commissioned by an NHS Trust, to enable patients and/or their carers to contact a pharmacy professional for medicines-related information and advice. It is advertised as being available for this purpose. It is specifically for medicines-related information and advice, and not for general clinical advice." Do patients and/or carers from your NHS Trust have access to a patient medicines helpline, as defined above? <i>(This can include a helpline which is run by your Trust, or by another provider)</i>	Multiple choice, single response	Yes No
Questions for Trusts that provide a medicines helpline (either via their own Trust or another Trust)		
Some NHS Trusts provide patients with access to a medicines helpline which is operated from another Trust. Other NHS Trusts may operate one or more patient medicines helpline (e.g., two helplines run from different hospitals within a Trust; or a general medicines helpline for all patients, and a specialist medicines helpline for patients of a particular clinical group). How many patient medicines helplines are being operated at your NHS Trust? <i>(Please only include helplines which are specifically for patients to access information/advice about medicines only, rather than general clinical advice)</i>	Multiple choice, single response	0 (Patients and carers from my NHS Trust have access to a helpline that is provided or commissioned by another Trust). 1 2 3 4 5
Questions for Trusts that provide a patient medicines helpline via another organisation		
For whom at your NHS Trust is the patient medicines helpline available? <i>(Please read all options and tick all that apply)</i>	Multiple choice, multiple response	Carers of patients from my NHS Trust. Discharged inpatients from my NHS Trust. Outpatients from my NHS Trust.

		Any patient whose medication was prescribed and/or dispensed by my NHS Trust. A specific clinical group of patients at my NHS Trust (If so, please specify in 'Other', below). Other (please specify).
Who provides the patient medicines helpline? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Medicines Information Team/Service at another NHS Trust. Dispensary at another NHS Trust. General Clinical Pharmacy Service at another NHS Trust. Specialist Clinical Pharmacy Service at another NHS Trust (If so, please specify the type of specialist service in 'Other', below). Other (please specify).
From approximately what year was the patient medicines helpline service available to patients from your NHS Trust?	Free text box	
Who is the helpline <i>promoted</i> to, at your NHS Trust? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Discharged inpatients. Outpatients. Other (Please specify).
How is the patient medicines helpline promoted to patients at your NHS Trust? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Posters in clinical areas around the Trust. On the Trust website. Leaflet or business card in prescriptions. On medicines labels or medicines bag labels. On patients' discharge summary. Staff routinely tell patients about it (e.g., discharge counselling). Other (please specify).
Where is the patient medicines helpline promoted? Please tick the most relevant statement, below.	Multiple choice, single response	The helpline is promoted at all sites within the Trust. The helpline is promoted at some sites within the Trust. The helpline is promoted at none of the sites within the Trust.

Do the promotional materials for the patient medicines helpline advertise the following? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Days/times of the week that the helpline is available. Examples of types of questions that service users can ask. None of the above.
Are any of these other methods of communication advertised to patients as alternative ways to get in touch for medicines information/advice? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Email. Online web form (e.g., via the Trust website). Face-to-face. Other (please specify).
How were the promotional methods for the patient medicines helpline decided? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Patients from my NHS Trust were consulted. Recommendations from guidelines / published studies. Decided by Pharmacy/MI staff at my Trust. Other (please specify)
Please read the following list and tick the options that you consider to be a major benefit or a minor benefit of providing a patient medicines helpline, based upon your experience. Leave any blank if you do not consider them to be a benefit.	Multiple choice, multiple response	Avoiding harm to patients (e.g., adverse effects, interactions). Identifying errors. Learning from patient experiences. Helping the organisation avoid complaints and possible litigation. Improving patient medication adherence. Supporting patient discharge. Providing assurance that patients can access professional advice at home. Improving the patient experience (e.g., patient satisfaction). Adhering to the NHS Constitution (e.g., patients have a right to information). Reducing visits to other healthcare services (e.g., GPs, A&E). Reducing medicines-related readmissions. Improvement in Trust targets and in national surveys (e.g., Adult Inpatient Survey). Optimising medicines.

Please use the space below if you have suggestions for other benefits of providing a patient medicines helpline which aren't on the list above.	Free text box	
How do you see patient medicines helplines at NHS Trusts developing in the future? (Please consider the future at your Trust, and future changes within the NHS as a whole organisation)	Free text box	
If you have any other comments about patient medicines helplines, or about the answers you have given in this survey, please use the space below.	Free text box	
Questions for Trusts that operate at least one helpline (The majority of questions are asked about each helpline)		
Is there an agreement between your NHS Trust and any other NHS Trusts so that their patients can access the patient medicines helpline being operated at your Trust? If yes, with how many other Trusts is there such an agreement?	Multiple choice, single response	None (There isn't an agreement with any other Trusts). 1 2 3 4 5
For whom is your medicines helpline available? <i>(Please read all options and tick all that apply)</i>	Multiple choice, multiple response	Carers of patients from my NHS Trust. Discharged inpatients from my NHS Trust. Outpatients from my NHS Trust. Any patient whose medication was prescribed and/or dispensed by my NHS Trust. A specific clinical group of patients at my NHS Trust (If so, please specify in 'Other', below). Patients from another NHS Trust (e.g., if another Trust shares your Medicines Information Team or Pharmacy Services). Anyone in the local area, regardless of whether they are/were a patient or not. Anyone who gets in touch, regardless of their location. Other (please specify).

Who provides the patient medicines helpline? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Medicines Information Team/Service at my NHS Trust. Dispensary at my NHS Trust. General Clinical Pharmacy Service at my NHS Trust. Specialist Clinical Pharmacy Service at my NHS Trust (If so, please specify the type of specialist service in 'Other', below). Other (please specify).
Approximately what year did the patient medicines helpline first start taking calls?	Free text box	
On average, how many calls to the patient medicines helpline do you receive in a week? <i>(Please provide an estimate if you are unsure)</i>	Free text box	
Does the phone line for the patient medicines helpline allow direct dialling from outside?	Multiple choice, single response	Yes No
Is the phone number for the patient medicines helpline a dedicated number, just for the helpline?	Multiple choice, single response	Yes No
What is the charge for calls to the patient medicines helpline?	Multiple choice, single response	Calls are charged at a local rate. Calls are charged at a premium rate. Calls are free.
Who is the helpline <i>promoted</i> to, at your NHS Trust? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Discharged inpatients Outpatients Other (Please specify)
How is the patient medicines helpline promoted to patients at your NHS Trust? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Posters in clinical areas around the Trust. On the Trust website. Leaflet or business card in prescriptions. On medicines labels or medicines bag labels. On patients' discharge summary.

		Staff routinely tell patients about it (e.g., discharge counselling). Other (please specify).
Where is the patient medicines helpline promoted? Please tick the most relevant statement, below.	Multiple choice, single response	The helpline is promoted at all sites within the Trust. The helpline is promoted at some sites within the Trust. The helpline is promoted at none of the sites within the Trust.
Do the promotional materials for the patient medicines helpline advertise the following? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Days/times of the week that the helpline is available. Examples of types of questions that service users can ask. None of the above.
Please enter the number of hours per day that the patient medicines helpline is advertised as being available, in the relevant spaces below. Please leave blank any days when the helpline is not available.	Table. Multiple choice, multiple response, with free text box.	Monday Tuesday Wednesday Thursday Friday Saturday Sunday
Is a pharmacy professional always available to answer calls from patients during advertised hours?	Multiple choice, single response	Yes, and there is also an answerphone service where patients can leave a message for out-of-hours calls. Yes. No, although there is an answerphone service where patients can leave a message. No.
Are any of these other methods of communication advertised to patients as alternative ways to get in touch for medicines information/advice? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Email. Online web form (e.g., via the Trust website). Face-to-face. Other (please specify).
How were the promotional methods for the patient medicines helpline decided? <i>(Please tick all that apply)</i>	Multiple choice, multiple response	Patients from my NHS Trust were consulted. Recommendations from guidelines / published studies.

		Decided by Pharmacy/MI staff at my Trust. Other (please specify)
Please read the following list and tick the options that you consider to be a major benefit or a minor benefit of providing a patient medicines helpline, based upon your experience. Leave any blank if you do not consider them to be a benefit.	Multiple choice, multiple response	Avoiding harm to patients (e.g., adverse effects, interactions). Identifying errors. Learning from patient experiences. Helping the organisation avoid complaints and possible litigation. Improving patient medication adherence. Supporting patient discharge. Providing assurance that patients can access professional advice at home. Improving the patient experience (e.g., patient satisfaction). Adhering to the NHS Constitution (e.g., patients have a right to information). Reducing visits to other healthcare services (e.g., GPs, A&E). Reducing medicines-related readmissions. Improvement in Trust targets and in national surveys (e.g., Adult Inpatient Survey). Optimising medicines.
Please use the space below if you have suggestions for other benefits of providing a patient medicines helpline which aren't on the list above.	Free text box	
How do you see patient medicines helplines at NHS Trusts developing in the future? (Please consider the future at your Trust, and future changes within the NHS as a whole organisation)	Free text box	
If you have any other comments about patient medicines helplines, or about the answers you have given in this survey, please use the space below.	Free text box	
Questions for Trusts that do not provide a patient medicines helpline (neither via their own Trust, nor outsourced)		

Has your NHS Trust provided patients with access to a medicines helpline in the past?	Multiple choice, single response	Yes No
You answered that your NHS Trust provided patients to a medicines helpline in the past. Please could you provide the reason/s why the patient medicines helpline service was stopped?	Free text box	
Does your NHS Trust have any plans to provide patients with access to a medicines helpline in the future? (i.e., via your Trust, or another provider)	Multiple choice, single response	Yes Possibly No
Research suggests that approximately 50% of Medicines Information Centres in the UK do not operate a patient medicines helpline. We are interested to learn more about the reasons why some NHS Trusts have decided not to operate a helpline. In the space below, we would be grateful if you could please provide the reason/s why your Trust does not currently operate a patient medicines helpline.	Free text box	
If a patient was to contact the Pharmacy Services team at your NHS Trust for medicines information and advice, what would you typically do?	Multiple choice, single response	Answer their query. Advise them to contact another service (e.g., their GP). Other (Please specify).
How do you see patient medicines helpline services at NHS Trusts developing in the future? (Please consider future changes within the NHS as a whole organisation)	Free text box	
If you have any other comments about patient medicines helplines, or about the answers you have given in this survey, please use the space below.	Free text box	
<i>Closing questions, for all respondents</i>		
If you are happy to provide your job title, please enter this in the space below.	Free text box	

If you are happy to provide the name of your NHS Trust, please select it from the list below.	Drop-down list.	(List of all NHS Trusts in England, except Ambulance Trusts)
Would you potentially be interested in finding out about other research on this particular topic, carried out by the Pharmacy & Pharmacology Department at the University of Bath? This will involve receiving the occasional email about research being carried out by this specific research team only, and does not commit you to taking part. You can unsubscribe from receiving the information at any time. If so, please enter your email address below. Your email address will only be used to inform you of research studies, and will not be given to any third parties. Your contact details will not be stored alongside the other data you have provided.	Free text box	
Thank you for taking the time to complete this survey – your input is greatly appreciated. After reading this page, please click 'Finish', below, otherwise your answers will not be saved. Please tick the relevant boxes below, and if necessary provide your email address. Your email will only be used to inform you of the results and to contact you if you are randomly chosen to win the voucher, and will not be given to any third parties. Your contact details will not be stored alongside the other data you have provided.	Multiple choice, multiple response / free text box	I would like to be included in the prize draw. I would like to receive the results of the study when they become available.

Operating a Patient Medicines Helpline: A Survey Study Exploring Current Practice in England Using the RE-AIM Evaluation Framework

Survey 2 questions and answer options

Question	Answer type	Answer options (if applicable)
Please read the following list and tick the options that you consider to be a major benefit or a minor benefit of providing a patient medicines helpline, based upon your experience. Leave any blank if you do not consider them to be a benefit.	Multiple choice, multiple response	<p>Avoiding harm to patients (e.g., adverse effects, interactions).</p> <p>Identifying errors.</p> <p>Learning from patient experiences.</p> <p>Helping the organisation avoid complaints and possible litigation.</p> <p>Improving patient medication adherence.</p> <p>Supporting patient discharge.</p> <p>Providing assurance that patients can access professional advice at home.</p> <p>Improving the patient experience (e.g., patient satisfaction).</p> <p>Adhering to the NHS Constitution (e.g., patients have a right to information).</p> <p>Reducing visits to other healthcare services (e.g., GPs, A&E).</p> <p>Reducing medicines-related readmissions.</p> <p>Improvement in Trust targets and in national surveys (e.g., Adult Inpatient Survey).</p> <p>Optimising medicines.</p>
Please use the space below if you have suggestions for other benefits of providing a patient medicines helpline which aren't on the list above.	Free text box	
How do you see patient medicines helplines at NHS Trusts developing in the future? (Please consider the future at your Trust, and future changes within the NHS as a whole organisation)	Free text box	

If you have any other comments about patient medicines helplines, or about the answers you have given in this survey, please use the space below.	Free text box	
<i>Closing questions</i>		
If you are happy to provide your job title, please enter this in the space below.	Free text box	
If you are happy to provide the name of your NHS Trust, please select it from the list below.	Drop-down list.	(List of all NHS Trusts in England, except Ambulance Trusts)
Would you potentially be interested in finding out about other research on this particular topic, carried out by the Pharmacy & Pharmacology Department at the University of Bath? This will involve receiving the occasional email about research being carried out by this specific research team only, and does not commit you to taking part. You can unsubscribe from receiving the information at any time. If so, please enter your email address below. Your email address will only be used to inform you of research studies, and will not be given to any third parties. Your contact details will not be stored alongside the other data you have provided.	Free text box	
Thank you for taking the time to complete this survey – your input is greatly appreciated. After reading this page, please click 'Finish', below, otherwise your answers will not be saved. Please tick the relevant boxes below, and if necessary provide your email address. Your email will only be used to inform you of the results and to contact you if you are randomly chosen to win the voucher, and will not be given to any third parties. Your contact details will not be stored alongside the other data you have provided.	Multiple choice, multiple response / free text box	I would like to be included in the prize draw. I would like to receive the results of the study when they become available.